

November 2, 2012

Via Electronic Submission

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, SW, Room TW-A325
Washington, DC 20554

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Re: *Ex Parte* Presentation

Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, WT Docket No. 12-70; Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5-1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz, ET Docket No. 10-142; and Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands, WT Docket No. 04-356

Dear Ms. Dortch:

Pursuant to Section 1.1206 of the Commission's rules, Sprint Nextel Corporation ("Sprint") submits this letter summarizing the meeting Sprint held at the Commission on October 31, 2012. At the meeting, Sprint was represented by Larry Krevor, Vice President, Government Affairs and Richard Engelman, Director, Government Affairs, of Sprint, and Marc Martin of K&L Gates LLP, counsel to Sprint. Sprint met with Blaise Scinto, Peter Daronco, Jeremy Marcus, Chris Helzer, Paul Malmud, John Spencer, Janet Young, Mathew Pearl, Kevin Holmes (by phone), Stephen Zak (by phone), John Leibovitz, Tom Peters and Brian Regan of the Wireless Telecommunications Bureau; and Julius Knapp and Michael Ha of the Office of Engineering & Technology.

During the meeting, Sprint reaffirmed its positions already included in the record of the above-captioned proceedings. Sprint reiterated that it remains supportive of DISH's request that the Commission reallocate the S-Band from the Mobile Satellite Service, with only ancillary terrestrial service permitted, to a fully terrestrial mobile broadband service, provided that Sprint's two major concerns are not adversely affected: (1) that there be no diminution or weakening of the PCS G Block interference protections; and (2) that the Commission makes the H Block fully useful for wireless broadband communications and auctions it expeditiously.

In addition, Sprint reiterated its concerns with DISH's recent *ex parte* comments proposing restriction of the H Block to small cell use, as summarized in its *ex parte* presentation

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dated October 31, 2012.¹ Sprint stated that it likely would not bid on the H Block if it were restricted to small cell use or air-to-ground communications. In response to an inquiry, Sprint confirmed that it did not expect the proposed SoftBank transaction to materially alter Sprint's stated interest in bidding in a broadband-viable H Block auction.

In response to a question about the OOB standards settings process at the 3rd Generation Partnership Project ("3GPP"), Sprint explained that standards work would be completed much more cooperatively and quickly if the Commission expeditiously adopts OOB rules for the AWS-4 and H Blocks in this proceeding, which the 3GPP will then follow as the governing parameters in completing the standard setting process. Having the Commission first establish the necessary AWS-4 service rules that are at the heart of this proceeding will in turn enable the 3GPP process to be completed with far less risk of delay or deadlock.

Sprint received several technical questions about potential OOB interference from the H Block into the AWS-4 spectrum. In particular, Commission staff asked Sprint whether it agreed with DISH's assessment that authorizing a full power H Block would cause at least 25% of DISH's uplink to become unusable.² Sprint indicated that DISH could take a number of steps that could limit the impact of H Block operations, without sacrificing nearly that much capacity. For example, DISH could reduce the potential for blocking interference from H Block base stations by installing adequate filtering on their AWS-4 bases stations and by collocating their

¹ See Letter from Marc Martin, Counsel for Sprint Nextel, to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 12-70 and 04-356; ET Docket No. 10-142, at 2 (filed Oct. 31, 2012).

"Sprint explained that while it remains DISH's burden to establish how its proposed H Block small cell limitation would serve the public interest, the proposal is troubling in several respects. First, DISH's proposed H Block restriction would significantly reduce the H Block's value in an auction by limiting its functionality for likely bidders. If the value of the H Block is reduced by the small cell restriction, then DISH's proposal would thwart Congress's intent to have the H Block auction contribute significantly to funding the build-out of a new public safety network. Second, the restriction conflicts with the ongoing evolution in broadband network architecture, by which small cells are interspersed with macro cells using the same spectrum to enhance network coverage. An inflexible restriction on the use of the H Block would hamper the ability of carriers to utilize spectrum flexibly, deploying small cells where appropriate to supplement macro cell coverage. Third, the restriction would create unnecessary technical challenges for device manufacturers and service providers that could harm the customer experience. Lastly, Sprint's preliminary technical analysis indicates that the proposal would not benefit interference management at 2 GHz, as small cell architecture would undercut the H Block and AWS-4 operators' ability to minimize base station transmission interference through co-locating macro-site base stations. Indeed, a proliferation of non-collocated small cells could actually pose greater interference risk to DISH's S-Band operations." (emphasis in original).

² See Letter from Jeffrey Blum, Senior Vice President and Deputy General Counsel, DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket Nos. 12-70 and 04-356; ET Docket No. 10-142, at 2 (filed Oct.22, 2012).

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base stations with H Block base stations. Sprint also noted that current wireless traffic is asymmetrical in nature, with far more capacity being needed on the downlink as opposed to the uplink.³

Sprint also briefly discussed the flexibility built into LTE to help avoid interference issues. Specifically, LTE utilizes a number of mechanisms that offer substantial advantages in interference management over previous technologies. Dynamic bandwidth allocation reduces uplink interference by enabling intra-cell orthogonality.⁴ The use of resource blocks, for instance, allows dynamic allocation of capacity in the face of interference or signal strength constraints.⁵ Moreover, as the Commission has acknowledged, LTE spreads user devices' signals across the channel bandwidth, dynamically controlling the power and number of RF subcarriers assigned to a particular device.⁶ Further, functions like Inter-Cell Interference Coordination ("ICIC") improve performances at cell edge by reducing interference through the exchange of interference-related information between LTE base stations (eNodeBs).⁷ Similarly, LTE Release 10 (the iteration that DISH has stated it plans to deploy) supports advanced

³ See, e.g., Stephen A. Wilkus, Distinguished Member of Technical Staff, Alcatel-Lucent, "TDD and Asymmetrical FDD," at 2, FCC Forum on the Future of Wireless Band Plans (July 16, 2012), *available at* <http://transition.fcc.gov/bureaus/oet/tac/tacdocs/meeting71612/PANEL2.2-Wilkus-Alcatel-Lucent.pdf> (describing how aggregate traffic is typically 17-30 times heavier in the downlink than the uplink); Al Jette, Head of North American & cdma/4G Standards, Nokia Siemens Networks, "FCC Forum on the Future of Wireless Band Plans," at 2-3 (July 16, 2012), *available at* <http://transition.fcc.gov/bureaus/oet/tac/tacdocs/meeting71612/PANEL2.1-Jette-NokiaSiemensNetworks.pdf> (indicating that downlink traffic is 6-13 greater than uplink traffic); Comments of Alcatel-Lucent, WT Docket Nos. 12-70 and 05-356; ET Docket No. 10-142, at 17 (filed May 17, 2012) ("The average traffic payload in wireless networks appear to be increasingly 'downlink heavy' by a factor of about 8 to 1. That is to say, about 85 to 95% of usable end-user bits are transmitted to the subscriber. Forecasts indicate that streaming video to subscribers will likely continue to grow in importance, while uplink traffic grows less rapidly.").

⁴ Hossam H'Mimy, Head of Broadband Network & Technology Strategy, Ericsson, "LTE Technology Capabilities" (Jan. 13, 2010), attached to Letter from Michael Lazarus, Counsel to MetroPCS, GN Docket Nos. 09-47, 09-51, and 09-137; WT Docket Nos. 04-356, 07-195, and 06-150 (filed Jan. 14, 2010).

⁵ Doug Hyslop and Chris Helzer, Wireless Strategies, "700 MHz Interference Management," at 11 (Sept. 10, 2010) ("LTE uplink transmissions use fewer resource blocks, meaning less spectrum, when signal conditions are poor and device transmit power is high, in order to maximize coverage reception.").

⁶ *Amendment of Part 27 of the Commission's Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band and Establishment of Rules*, WT Docket No. 07-293, and *Policies for the Digital Audio Satellite Service in the 2310-2360 MHz Frequency Band*, IB Docket No. 95-91, Order on Reconsideration, FCC 12-130, ¶ 69 (Oct. 17, 2012).

⁷ Alcatel-Lucent, "Network Sharing in LTE: Opportunity & Solution," at 9, attached to Letter from Jeffrey A. Marks, Senior Counsel Alcatel-Lucent, PS Docket No. 06-229 (filed Aug. 25, 2011).

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interference mitigation techniques.⁸ LTE user equipment routinely operates at less than maximum permitted power, reducing the difficulty of constraining out-of-band emissions and permitting higher powered traffic to be positioned in parts of the spectrum that are the least likely to cause interference.⁹

Sprint also discussed the advantages of larger allocations of contiguous spectrum for LTE, describing the ways in which 10x10 MHz (or 20x20 MHz) configurations confer significant efficiency, throughput, capacity, and higher peak data rate gains over 5x5 MHz allocations.¹⁰

Finally, Sprint stated that the technical standards that the Commission adopts in this proceeding should be fair to future licensees of both the H Block and AWS-4 spectrum and provide incentives for them to coordinate in good faith as part of a community of adjacent spectrum licensees and service providers.

Pursuant to Section 1.1206 of the Commission's Rules, a copy of this letter is being filed electronically in the above-referenced dockets and electronic copies are being submitted to the Commission staff listed below. If you have any questions, please feel free to contact me.

⁸ Letter from Michael McMenamin, Alcatel-Lucent, "Broadband Public Safety & Long Term Evolution," PS Docket No. 06-229, at 23 (April 19, 2010). *See also* Presentation by Stephen A. Wilkus, *supra* note 3, at 4 ("Methods are emerging for improving UL Spectral Efficiency, more so than DL SE.").

⁹ Comments of Motorola Mobility, Inc., WT Docket No. 03-66, RM-11614, at 6 (filed July 7, 2011) ("... typical 4G system design specifications limit the bandwidth that is typically used at full power, which in turn limits OOB. As noted in the FNPRM, mobile 4G devices operate under very stringent power controls in order to maximize battery life and minimize intra-system interference. In fact, LTE simulation studies conducted by 3GPP show that the average UE transmit power across all devices in a cellular mobile network is below 1 dBm and that 95 percent of all devices transmit with a power below 7 dBm, which is a 16 dB margin to the maximum transmit power of 23 dBm.").

¹⁰ *See, e.g.*, Kris Rinne, Senior Vice President Architecture and Planning, AT&T, "Wireless Spectrum: The Path Ahead," at 3, 24 (Oct. 25, 2010), attached to Letter from Joseph P. Marx, Assistant Vice President, AT&T Services Inc., WT Docket No. 06-150; PS Docket No. 06-229; GN Docket No. 09-51; RM-11592, CG Docket Nos. 09-158, 98-170; and WC Docket No. 04-36 (filed Oct. 25, 2010).

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Sincerely,

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